

Listing of Claims (this listing replaces all prior versions):

1. (Currently amended) A method for driving a droplet ejection device having an actuator, comprising:

applying a multipulse waveform comprising two or more drive pulses to the actuator to cause the droplet ejection device to eject a single droplet of a fluid,

wherein each pulse has an amplitude, the amplitude of each subsequent pulse in the two or more pulses is greater than the amplitude of earlier pulses,

wherein a frequency of the drive pulses is greater than a natural frequency, f_i , of the droplet ejection device.

2. (Original) The method of claim 1, wherein the multipulse waveform has two drive pulses.

3. (Original) The method of claim 1, wherein the multipulse waveform has three drive pulses.

4. (Original) The method of claim 1, wherein the multipulse waveform has four drive pulses.

5. (Currently amended) The method of claim 1, wherein the pulse ~~frequencies~~ frequency is ~~are~~ greater than about $1.3 f_i$.

6. (Original) The method of claim 5, wherein the pulse frequency is greater than about $1.5 f_i$.

7. (Original) The method of claim 6, wherein the pulse frequency is between about $1.5 f_i$ and about $2.5 f_i$.

8. (Original) The method of claim 7, wherein the pulse frequency is between about $1.8 f_i$ and about $2.2 f_i$.

9. (Original) The method of claim 1, wherein the two or more pulses have the same pulse period.

10. (Original) The method of claim 1, wherein the individual pulses have different pulse periods.

11. (Original) The method of claim 1, wherein the two or more pulses comprise one or more bipolar pulses.

12. (Original) The method of claim 1, wherein the two or more pulses comprise one or more unipolar pulses.

13. (Original) The method of claim 1, wherein the droplet ejection device comprises a pumping chamber and the actuator is configured to vary the pressure of the fluid in the pumping chamber in response to the drive pulses.

14. (Original) The method of claim 1, wherein each pulse has an amplitude corresponding to a maximum or minimum voltage applied to the actuator, and wherein the amplitude of at least two of the pulses are substantially the same.

15. (Original) The method of claim 1, wherein each pulse has an amplitude corresponding to a maximum or minimum voltage applied to the actuator, and wherein the amplitude of at least two of the pulses are different.

16. (Canceled)

17. (Original) The method of claim 1, wherein the droplet ejection device is an ink jet.

18. (Currently amended) A method comprising driving a piezoelectric droplet ejection device with a waveform comprising [[one]] two or more pulses each having a period less than about [[20]] 25 microseconds to cause the droplet ejection device to eject a single droplet in response to the pulses, each pulse having an amplitude, the amplitude of each subsequent pulse in the two or more pulses being greater than the amplitude of earlier pulses.

19. (Original) The method of claim 18, wherein the one or more pulses each have a period less than about 12 microseconds.

20. (Original) The method of claim 19, wherein the one or more pulses each have a period less than about 10 microseconds.

21. (Canceled)

22. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the two or more pulses each have pulse period less than about ~~[[12]]~~ 20 microseconds.

23. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the two or more pulses each have pulse period less than about 8 microseconds.

24. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the two or more pulses each have pulse period less than about 5 microseconds.

25. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the droplet has a ~~mass~~ volume between about 1 picoliter and 100 picoliters.

26. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the droplet has a ~~mass~~ volume between about 5 picoliters and 200 picoliters.

27. (Currently amended) The method of claim ~~[[21]]~~ 18, wherein the droplet has a ~~mass~~ volume between about 50 picoliters and 1000 picoliters.

28. (Currently amended) An apparatus, comprising:
a droplet ejection device having a natural frequency f ; and
drive electronics coupled to the droplet ejection device,
wherein during operation the drive electronics drive the droplet ejection device with a

multipulse waveform comprising a plurality of drive pulses having a frequency greater than f_i and the harmonic content of the plurality of drive pulses at f_i is less than about 50% of the harmonic content of the plurality of the drive pulses at f_{max} , the frequency of maximum content.

29. (Canceled)

30. (Currently amended) The apparatus of claim [[29]] 28, wherein the harmonic content of the plurality of drive pulses at f_i is less than about 25% of the harmonic content of the plurality of the drive pulses at f_{max} .

31. (Original) The apparatus of claim 30, wherein the harmonic content of the plurality of drive pulses at f_i is less than about 10% of the harmonic content of the plurality of the drive pulses at f_{max} .

32. (Original) The apparatus of claim 28, wherein during operation the droplet ejection device ejects a single droplet in response to the plurality of pulses.

33. (Original) The apparatus of claim 28, wherein the droplet ejection device is an ink jet.

34. (Original) An ink jet printhead comprising the ink jet of claim 30.

35.-41. (Canceled)

42. (New) A method for driving a droplet ejection device having an actuator, comprising:
applying a multipulse waveform comprising two or more drive pulses to the actuator to cause the droplet ejection device to eject a single droplet of a fluid,
wherein all the pulses increase the volume of the single droplet, and a frequency of the drive pulses is greater than a natural frequency, f_i , of the droplet ejection device.

43. (New) The method of claim 1, wherein the multipulse waveform has two drive pulses.

44. (New) The method of claim 1, wherein the multipulse waveform has three drive pulses.
45. (New) The method of claim 1, wherein the multipulse waveform has four drive pulses.
46. (New) The method of claim 1, wherein the pulse frequency is greater than about 1.3 *f_i*.
47. (New) The method of claim 5, wherein the pulse frequency is greater than about 1.5 *f_i*.
48. (New) The method of claim 1, wherein the individual pulses have different pulse periods.
49. (New) The method of claim 1, wherein the two or more pulses comprise one or more bipolar pulses.
50. (New) The method of claim 1, wherein the two or more pulses comprise one or more unipolar pulses.
51. (New) The method of claim 1, wherein the droplet ejection device comprises a pumping chamber and the actuator is configured to vary the pressure of the fluid in the pumping chamber in response to the drive pulses.